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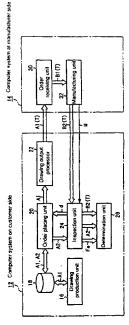
Electronic data management system and method (24)

The invention provides an electronic data management system with a simplified configuration, wherein the authenticity of the electronic data and the specificace of unauthenticated electronic data can be determined accurately. (22)

A drawing output processor (22) transmits original data (41) which is original electric drawing data to an order receiving unit (30) with a tag (T) attached. The order receiving unit(30)and a manufacturing unit (32) transmit a manufacturer's copied date (B2(T)) copied

The inspection unit (24) transmits the inspection result (Fa) for the product (M) the client's copied data (A2) recopied from the original data (A1), and the manufacturer's copied data (B2 (T)) to a determination unit (26). The determination unit (26) compares the tag (T) extracted from the manufacturer's copied data (B2) with the original value of the client's copied data (A3) and the original value of the manufacturer's copled data (B2) and determines the authenticity of the client's copied dafrom the original data (A1(T)) to an inspection unit (24) ta (A2) and the manufacturer's copied data (B3).

F1G. 1 10 Electronic data management system



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relates to an electronic data management system and [0001] This invention relates to an electronic data nent system and method, and more particularly method capable of determining the authenticity of elec-

with the order may be delivered. Particularly, when electronic (numerical) data is submitted as the drawings for the ordered products, the following reasons can cause When a customer places an order with a manufacturer, products different from a drawing submitted deficient products. [0002]

1. A manufacturer has made a mistake in the process of manufacturing products.

2. A manufacturer has altered the drawings and then manufactured the products according to the aitered drawings.

3. A customer has altered the drawings after placing the order.

83 [0003] Whether or not an electronic drawing is altered tem into both of the customer and manufacturer compube determined by installing an authentication sys-

cording to authentication information recorded within [0004] An authentication system, for example, as disclosed in Japanese Patent Publication Laid-open No. Hei. 9-198437, is designed to be capable of determining whether or not the electronic document is altered acthe electronic document (i.e. electronic drawing) and authentication information recorded in the computers of both customer and manufacturer.

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is required to be recorded in a computer and within an electronic document, and the authentication process therefore becomes complicated.

[0006] And as this authentication system requires the [0005] However, with the authentication system described above, each time authentication is executed at each computer system, the authentication information

though 3 above in order to clarify exactly where the renstallation of management functions to record the au-Moreover, this authentication system has difficulty in determining which customer or manufacturer has altered an electronic document in cases where an thentication information in each computer, the configuelectronic document is attered after authentication Therefore, it has been difficult to specify the reasons ration of the computer system becomes complicated.

of electronic data accurately, and capable of specifying ion to set out to provide an electronic data management the computer system used in changing the electronic data in cases where electronic data is found to be not It is therefore the object of the present invensystem and method capable of determining authenticity authenticated, while retaining a straightforward config-

sponsibility lies for a deficient product.

numerals shown in the attached drawings to enable ease of understanding. The content of this description 0009] Here, a description is given with respect to the is applicable to but not limited to the items to which numerals are attached

into at least two groups, wherein a reference characteristic value extracting means (26) extracts a reference ed to the present invention (10) is an electronic data management system (10) for using electronic data mucharacteristic value (H1) from copied electronic data{B2 comparison subject characteristic value calculating and/or electronic data (A2) recopled from the original electronic data (A1), and determining means (26) compares the reference characteristic value (H1) with the determines the authentication of the copied electronic data (B2) and/or the recopied electronic data (A2) (the [0010] An electronic data management system relattually among a plurality of computer systems classifled (T)) to which a reference characteristic value (H1) calculated from an original electronic data(A1) is attached means (26) calculates comparison subject characteristic values (H2, H3) from the copied electronic data (B2) comparison subject characteristic values (H2, H3) ther invention as claimed in Claim 1). 8 5

electronic data (B2) and/or the recopled electronic data (A2) can be determined by comparing a reference char-(B2(T)) with comparison subject characteristic values (HZ, H3) calculated from a coped electronic data (B2) and/or ecopiel destronic data (K2) with this electronic data management system (10). Therefore the authentisively simplified compared to the system with the authentication management functions, etc. installed in [0011] In this case, the authentication of the copied acteristic value (H1) attached to a copied electronic data cation of the copied electronic data (B2) and/or the recopled electronic data (A2) can be managed securely, and the system configuration can be even more exteneach computer system.

[0012] The computer systems above are classified into a management computer system (12) in which the stalled, and a managed computer system (14) which does not belong to the management computer system (12). Sources of the copled electronic data (B2) and/or agement computer system (12) (as disclosed in claim 2 reference characteristic value extracting means (26), the comparison subject characteristic value calcutating means (26), and the determination means (26) are inthe recepied electronic data are managed in the manş 5

or the managed computer system (14) was used in changing the electronic data can be specified. tronic data (B2) and/or the recopied electronic data (A2) are not authenticated according to sources of the copled electronic data (B2) and/or the recopied electronic data (A2), which of the management computer system (12) [0013] Therefore in the case where the copied elecof the invention). ş

In this case, the management computer sys-

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tem (12) can also be provided with reference characteristic value attaching means (22), that attaches the ref-Each item of electronic data (A1, A2, B2) is electronic drawing data, and each characteristic value (IH1, Hz, Hz) and bo provided as a hash value adeulated from graphic information included in each item of electronic drawing data (as disclosed in claim 3 of the inventronic drawing data). erence characteristic value (H1) calculated from the original electronic data (A1) to the original electronic data (A1) (as disclosed in claim 3 of the invention). [0015] Each Item of electronic data (A1, A2,

5 8 8 original electronic data (A1). The managed computer system (14) is a manufacturer's computer system for manufacturing products for which an order was placed ing data (A2, B2) correspond to each other by compar-ing the recopied electronic data (A2) outputted from the customer computer system (12) and/or the electronic drawing data provided as copied electronic data (B2) [0016] The management computer system (12) is a customer's computer system for placing orders for products based on electronic drawing data provided as the by the customer's computer system (12) and for delivering the manufactured products (M). The managed computer system (14) is a manufacturer's computer syslem for manufacturing products for which order was placed by the customer's computer system (12) and for delivering the manufactured products (M). The customer computer system (12) includes means for determining whether or not the products (M) and electronic drawoutputted from the manufacturer computer system (14) and the products (M) delivered from the manufacturer computer system (14) (as disclosed in claim 5 of the in-

defective can be managed securely in the customer computer system (12). Therefore whether or not the products (M) are

9 ogy and embedded in the electronic data (A1(T), B2(T)). Therefore no computer system other than the specified or the recopied electronic data (A2) can therefore be The reference characteristic value (H1) is encrypted or processed by electronic water-mark technolcomputer systems (management computer system customer computer system (12)} can change the content of the reference characteristic value (H1) and the authenticity of the copied electronic data (B2) and/ [0018] (12)

An electronic data management method of the prosent invention is an electronic data management ter system (12) and outputting the original electronic data (A1) as drawing data for the ordered products to a ess for outputting the original electronic drawing data (A1(T1)) with an attached reference characteristic value (H1) previously calculated from the graphic information of the original electronic drawing data (A1), a process for extracting the reference characteristic value (H1) from the copied electronic drawing data (A1(T1)) of the method for storing original data at the customer compumanufacturer computer system (14) comprises a proc-[0019]

calculating reference characteristic value (H2) from the stored graphle information of the recopied electronic drawing data (A2) of the original electronic drawing data original electronic drawing data {A1(T)}, a process for (A1), and a process for determining whether or not either of the copied electronic drawing data (B2) or the recopied electronic drawing data (A2) is altered by comparing the reference characteristic value (H1) with the comparison subject characteristic value (H2) (the invention claimed in Claim 8).

[0020] Therefore the authenticity of the copied electronic drawing data (B2) and the recopied electronic drawing data (A2) can be managed securely, and the management method with simplified configuration will be available. electronic data

FIGS. 1 to 5 illustrate preferred embodiments of the present invention, in which: [0021] FIG. 1 is a block view of a configuration for an electronic data management system of a first embodi-

ment of the present invention. [0022] FIG. 2 is a block diagram of a configuration of

FIG. 3 is a flowchart showing a determination process executed in an inspection unit constituting the electronic data management system described in FIG. [0024] FIG. 4 is a flowchart showing a determination for determining whether or not a product is defective [0023]

process executed in a determination unit constituting the electronic data management system described in FIG. 1, for determining whether or not the content of the electric drawing data has been changed.

[0025] FIG. 5 is a flowchart showing a determination process executed in a defermination unit constituting the electronic data management system described in FIG. 1, for determining whether or not the content of the 8

electric drawing data has been changed.
[0026] The following is a description with reference to the drawings of the preferred embodiments of the

[0027] FIG. 1 is a block view of a configuration for an

electronic data management system (10) of a first em-

[0028] The electronic data management system 10 is for using electronic drawing data as electronic data mutually at a customer side and at manufacturer side, and comprises the customer computer system 12 on the customer side and the manufacturer computer system 14 on the manufacturer side. The customer computer system 12 and manufacturer computer system 14 can configured with a plurality of computer systems. bodiment of the present invention. ŧ 30

means) 18, an order placing unit 20, a drawing output processor (reference characteristic value attaching [0029] The customer computer system 12 comprises a drawing production unit 16, a storage device (storage means) 22, an inspection unit 24, and a determination unit (reference characteristic value extracting means

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and determination means) 28. The manufacturer computer system 14 comprises an order receiving unit 30 and a manufacturing unit 32.

16 in the storage media. Original data A1 (T) with a tag T attached described later can be stored in the storage computer system 12 produces the drawing for the product being ordered, and outputs the produced drawing to the storage device 18 as original electronic drawing data referred simply as original data). The storage ements, a hard disk, or a laser disc and stores the original data A1 calculated from the drawing production unit device 18 comprises storage media such as memory el-The drawing production unit 16 of the customer

data A1 form the storage device 18, and outputs the original data A1 to the drawing output processor 22 as the drawing for the product being ordered. The order placing unit 20 reads out the original

the drawing output processor 22. The drawing output processor 22 comprises hash value calculation means [0032] FIG. 2 is a block diagram of a configuration for 40, hash value encryption means 42, and tag attach-

placing unit 20 is supplied to the hash value calculation The original data A1 outputted from the order means and the tag attachment means 44. [0033]

[0034] The heah value calculation means 40 cakulates the reference has a reference characteristic formation such as lines, points, dimensions, finish marks, etc, and management information such as the title of the drawing, name of the

8 [0035] The hash value encryption means 42 encrypts the reference hash value H1 calculated by the hash value calculation means 40, and calculates an encrypted drafter, and revision date, etc. [0035] The hash value encryp reference hash value H11.

In this case, the encryption process is performed using encryption methods such as the methods employed by PGP (Pretty Good Privacy), etc.

5 £ [0036] The hash value encryption means 42 encrypts Dassault systems) is used for producing the drawings, the encrypted reference characteristic hash value H1' is preferably converted into hexadecimal numbers and the reference hash value H1 calculated by the hash value calculation means 40, and calculates the encrypted reference hash value H1'. When "CATIA" (software from in order to maintain compatibility with the functions of capitalized, and then embedded in the original data A1

20 55 a water-mark embedded in an original image is created in a manner which is indistiguishable with the naked eye In this case, the reference hash value H1' inbedded in the original data A1 after being processed embodding a water-mark into an original image, where cluded in the tag T is encrypted, and the tag T is emwith electronic water-mark technology (technology for from the original image), etc. It is therefore not possible for any system other than the drawing output processor

22 and the determination unit 26 of the customer computer system 12 to confirm the existence of the tag T, or

[0038] The tag attachment means 44 outputs the original data A1 (T) including the tag T to the order receiving unit 30 of the manufacturer computer system 14 as drawing data for the product being ordered. Here, the character "(T)" describes that the tag T is embedded in nine or change the content of the tag T.

the original data A1. [0039] As described in FIG. 1, when the order receiving unit 30 receives the original data A1 (T) from the customer computer system 12, the order receiving unit 30 determines the content of the original data A1 (T) (the content of the order received), and outputs the copied electronic data B1 (T) (hereinafter referred as copied data on the manufacturer side) copied at the order receiv-5 5

ing unit 30 to the manufacturing unit 32.

[0040] Regarding the possibility of the change of the content of the original data A1 with the exception of the tag T made at the order receiving unit 30, the numeral used to describe the copied data on the manufacturer side outputted from the order receiving unit 30 will now be changed from A1 to B1". Similarity, changes of 'A1' to 'A2', and 'B1' to 'B2' will also be made.

The numeral 'A' describes that the source of the elec-50

tronic drawing data is the customer computer system 12, and the numeral "B" describes that the source of the efectronic drawing data is the manufacturer computer system 14. 52

according to the copied data on the manufacturer side [0041] The manufacturing unit 32 manages the manufacture of the product (controls the production process) B1 (T) outputted from the order receiving unit 30. 30

tured product M to the customer, and output the copied data on the manufacturer side B2 (T) copied from the copied data on the manufacturer side B1 (T) used for the manufacturing this product M to the inspection unit Then the manufacturing unit 32 delivers the manufac-

24 of the customer computer system 12. [0042] When the inspection unit 24 receives the product M and the copied data on the manufacturer side B2 (T) from the manufacturer computer system 14, the inspection unit 24 outputs the command d that requires out from the storage device 18 according to the command d is transferred from the order placing unit 20 to the supply of the electronic drawing data A2 (the recopied electronic drawing data (hereafter referred as copied data on the customer side) recopied from the original data by the customer), which corresponds to the product M and the copied data on the manufacturer side B2 (Τ). [0043] The copied date on the customer side A2 read

er or not the product M is defective by comparing the copied data on the customer side A2 and the copied data on the manufacturer side B2 (T) outputted from the manufacturer computer system 14 with the product M. In this case, the inspection unit 24 manages the source The inspection unit 24 then determines wheththe inspection unit 24.

of the copied data on the customer side A2 and the copton the manufacturer side B2 (T). FIG. 3 is a flowchart showing a determination

process executed in an inspection unit 24 for determin-[0046] In step S11, the inspection unit 24 compares copied data on the customer side A2 with the product whether or not the product M is defective.

and the product M are compared by utilizing the three-dimensional apometry inseasting apparatus, for exam-ple, the apparatus for measuring the shape of the sur-tace of the product M by scenning the surface of the In this step, the copled data on the customer side A2 product M with means such as an inspection needle, or

dition of the product M in the step S12 is set to Fa=0 to When the copied data on the customer side A2 and the product M is confirmed to coincide in this step S11 (YES), the value of the flag Fa describing the conshow that the product M is not defective.

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[0048] When the copied data on the customer side A2 and the product M is confirmed not to coincide in this [0049] In step S13, the inspection unit 24 compares step S11 (NO), the process proceeds to step S13.

the copled data on the manufacturer side B2 (T) (copled the product M in a similar process executed in step S11 data B2 on the manufacturer side B2 practically) with

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[0050] When it is confirmed that the copied data on the manufacturer side B2(T) and the product M does not side A2 nor the copied data on the manufacturer side B2(T); the value of the flag Fa in the step S14 will be set as Fa=1 to show that the product M is defective. colncide in step S13 (NO), {i.e. the product M does not neither of the copied data on the customer [0051] When it is confirmed that the copied data on

the manufacturer side B2(T) and the product M coincide in step S13 (YES), the value of the flag Fa in the step S15 is set as Fa=2 to show that whether or not the prod-

[0052] When the processing of steps S11 to S15 is complete, the inspection unit 24 supplies the value of the flag Fa that describes the condition of the product M, the copied data on the customer side A2, and the copied data on the manufacturer side B2(T) to the deuct M is defective has not yet been determined. termination unit 26 as described in FIG. 1.

[0053] When the determination unit 26 receives the flag Fa from the inspection unit 24, the copied data on the customer side A2 and the copied data B2 (T) on the manufacturer side, the determination unit 26 determines whether or not any changes are made on the contents of either of the copied data on the customer side A2 or the copied data on the manufacturer side B2 (T) as described in the flowchart shown in FIG. 4.

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In step S21, the determination unit 26 confirms whether or not the value of the flag Fa is set to Fa=2 showing that whether or not the product M is defective has not yet been determined. When the value of the flag

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next step S22, and when the flag Fa is not set as Fa=2 (i.e. Fa=0 or Fa=1) (NO), the process is forwarded to step S29 as described later. Fa is set as Fa =2 (YES), the process proceeds to the

sor 22 from the copied data on the manufacturer side B2 (T). In the step S22, the determination unit 26 extracts the tag T attached by the drawing output proces-[0055]

extracting means for extracting the reference hash value H1 as the reference characteristic value from the Then in step S23, the determination unit 26 extracts the ue H1 from the encrypted reference hash value H1', i.e. these processes executed in these steps S22 to S24 have the function of the reference characteristic value encrypted reference hash value H1' from the tag T, proceeds to step S24, and decodes the reference hash valcopied data B2 on the customer side B2 (T).

executed in this step S25 has the function of the companison subject characteristic value calculating means for calculating the hash value on the customer side H2 [0056] In the following step S25, the determination unit 26 calculates the hash value on the customer side H2 as comparison subject characteristic value from the as the comparison subject characteristic value from the copied data on the customer side A2 for comparison with the reference hash value H1. copied data on the customer side A2. i.e. the process

[0057] In the following step S26, the determination unit 26 compares the reference hash value H1 extracted in the step S24 with the hash value on the customer side H2 calculated in step S25. 30

value H1 and the hash value on the customer side H2 coincide in step S26 (YES), the value of the flag Fb describing the authenticity of the copied data on the customer side A2 and the copied data on the manufacturer side B2 (T) in the step S27 are set as Fb=1 to show that [0058] When it is confirmed that the reference hash changes were made on the copied data on the manufacturer side B2 (T). 8 ş

customer side H2 coincide, the original data A1 and the 3) when the product M and the copied data on the customer side A2 do not coincide (the step S12 in FIG. 3), This result can be obtained as follows; when the reference hash value H1 and the hash value on the copied data on the customer side A2 can be determined to coincide. When the product M and the copied data on the manufacturer side B2 (T) coincide (step S14 in FiG. the copied data on the manufacturer side B2 (T) is regarded to have been changed in the manufacturer com-[0029]

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When the reference hash value H1 and the hash value on the customer side H2 are confirmed not to coincide in step S26 (NO), the value of the flag Fb in es were made to the copied data on the customer side the following step S28 is set to Fb=2 to show that chang[0061] This result can be obtained as follows; when the reference hash value H1 and the hash value on the

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customer side H2 do not coincide, for example, the original data A1 (the copied data on the customer side A2) stored in the storage device 18 can be considered to have been changed, for example, by the drawing output Therefore the process executed in the step S26 functions as determination means for determining processor 16 of the customer computer system 12.

A2 by comparing the reference hash value H1 with the the authenticity of the copied data on the customer side [0063] In the following step S29, the determination hash value on the customer side H2.

flag Fb set in steps S27 and S28 and the value of the flag Fa set by the inspection unit (the information such as whether or not the product M is defective, the copied ta A1 (whether or not this data is authentic), and the source where the change has been made when the copied data on the outsomer side A2 and the opsied data on the manufacturer side B2 are not authenticated) to unit 26 outputs information based on the value of the data on the customer side A2 and the copied data on the output device such as display device which doesn't show the drawing, and to a printer, etc. The output device outputs the information of the defectiveness of the product M, and the authenticity of each item of electronic the manufacturer side B2 coincides with the original dadrawing data A1, A2, B1, B2, etc.

[0064] Such a configuration can also be provided wherein the determination unit 26 calculates the hash value of the copied data on the manufacturer side B2, and determines if any change has been made to the copied data on the manufacturer side B2 by comparing the hash value with the reference hash value H1 (the reference hash value H1 attached to the copied data on the manufacturer side B2) calculated in the step \$24. The following is a detailed description of this process with reference to the flowchart shown in FIG. 5.

[0065] The inspection unit 26 executes the similar process to the step S22 to S24 in FIG. 4 in the step S31 to S33 (reference characteristic value extracting means). Thus the reference hash value H1 will be ex-tracted from the copied data on the manufacturer side B2 (T) and restored.

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â 20 calculates the hash value on the manufacturer side H3 determination unit 26 removes the tag T attached by the drawing output processor 22 from the copied data on the manufacturer side B2 (T), and calculates the hash Then, in step S34 (the comparison object original value calculating means), the determination unit 26 as the comparison object original value from the copied data on the manufacturer side B2 (T). In this case, the [9900]

termination unit 26 compares the reference hash value H1 calculated in the step S33 with the hash value on the [0068] When the reference hash value H1 and the hash value on the manufacturer side H3 are confirmed manufacturer side H3 calculated in step S34 (H1=H3?). to coincide in step S35 (YES), the value of the flag Fc [0067] In step S35 (the determination means), the de-

the copied data on the manufacturer side B2 is set as Fc=1 to show that no changes have been made to the in the following step S36 describing the authenticity of

value H1 and the hash value on the manufacturer side H3 do not coincide in step S35 (NO), the value of the lag Fc in the following step 37 describing the authenticity of the copied data on the manufacturer side B2 is set as Fc=2 to show that changes are made to the copled data on the manufacturer side B2.

[0070] Moreover, by executing the process of steps S25 to S28 in FIG. 4 after steps S36 or S37, whether or not the copied data has been changed on the customer side A2 can also be determined. Therefore whether or not both/either of the copied data on the customer side 42 and/or the copied data on the manufacturer side B2 5

copied data on the manufacturer side B2 can be managed securely. Moreover, the configuration can be drastically simplified compared to the system for example in has/have been changed can be determined. [0071] The electronic data management system 10 in the embodiment of the present invention is therefore capable of determining the authenticity of copied data on the customer side A2 and the copied data B2 on the manufacturer side B2 by comparing the reference hash value H1 based on the original data A1 attached to the copied data on the manufacturer side B2 (T) with the hash value on the customer side H2 calculated from the copied data on the customer side A2 and the hash value on the manufacturer side H3 calculated from the copied data on the manufacturer side B2. Therefore the authenticity of the copied data on the customer side A2 and the which the authentication management functions are installed in each computer system (the computer system on the customer side 12 and the computer system on 50 8 3

the manufacturer side 14).
[0072] Further, as the sources of the copied data on ufacturer side B2 are managed in the computer system on the customer side 12, the computer system on the customer side 12 is capable of specifying in which of the computer system on the customer side 12 or the computer system on manufacture side 14 a change to the copied data on the customer side A2 and the copied dathe customer side A2 and the copied data on the mana on the manufacturer side B2 has been made.

(0073) The reference hash value H1 is encrypted and embodded in the original data A1 as the tag T by use of the electronic water-mark technology, so that no system other than the computer system on the customer side the determination unit 26, can confirm the existence of he tag T, or determine or change the contents of the tag Therefore the authenticity of the copied data on the customer side A2 and the copied data on the manufac-8

turer side B2 can be managed securely.
[0074] The electronic data management system 10 in the embodiment of the present invention can also be ap-

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plied to electronic data management systems for managing various sorts of electronic data other than the vination of the authenticity of electronic data, and [0075] The present invention enables the accurate enables the computer system used in changing electronic data to be specified in cases where electronic data 9 in summary it is an object to provide an electronic data management system with a simplified configuration, wherein the authenticity of the electronic data and the specification of the source of unauthenticated electronic data can be determined accurately. [0026]

tached. The order receiving unit 30 and a manufacturing unit 32 transmit a manufacturer's copied data B2(T) copied from the original data A1 (T) to an inspection unit 24. [0077] To achieve this, a drawing output processor 22 transmits original data A1 which is original electric drawing data to an order receiving unit 30 with a tag T at-The inspection unit 24 transmits the inspection result Fa from the original data A1, and the manufacturer's copied data B2 (T) to a determination unit 26. The determination unit 26 compares the tag T extracted from the manufacent's copied data A3 and the original value of the manutacturers copied data B2 and determines the authenfor the product M, the client's copied data A2 re-copied turer's copied data B2 with the original value of the cliticity of the client's copied data A2 and the manufacturer's copied data B3.

Description of the Numerals

[0078]

- 10 Electronic data management system
- Manufacturer computer system 14

Customer computer system

12.

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- Drawing production unit 16-
- Storage device 18
- Order placing unit 50-
- Drawing output processor - 25
- Inspection unit 24 -

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Determination unit - 92

Order receiving unit

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- Manufacturing unit 33
- Hash value calculation means 40.

the manufacturer

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- 42 Hash value encryption means
- Tag attachment means
- Guide to the FIGS

[0079]

is found to be not authenticated, while retaining a simple

FIG. 1

- Computer system on manufacturer side Computer system on customer side
 - Computer system at manufacturer side

 - Drawing production unit
 - Drawing output processor Order placing unit

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- Inspection unit
- Determination unit
 - Order receiving unit Manufacturing unit

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FIG. 2

(Left) From order placing unit 20 (Right) To order receiving unit 30

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- Order receiving unit
- Drawing output processor Order receiving unit
- Hash value calculation means 8 8 8 8 4
 - hash value encryption means Tag attachment means

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FIG. 4

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S22: Extract Tag T from the copied data on the manufacturer side B2 (T) S23: Extract an encrypted reference hash value H1' from Tag T S24: Decrypt a reference hash value H1 from the encrypted reference hash value H1'. S25: Calculate hash value H2 on the customer side according to the copied data A2 on the customer side.

Flags Fa and Fb to an output device. S29:

Output the information collected from

FIG. 5

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S31: Extract Tag T from the copied data on manufacturer side B2 (T). S23: Extract an encrypted reference hash val-S33: Restore a reference hash value H1 from the encrypted reference hash value H1'. S34: Calculate hash value H3 on the manufacturer side according to the copied data B2 on

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Ctalms

- electronic data (A₁, A₂, B₂) mutually among a plurality of computer systems (12, 14) classified into at An electronic data management system for using least two groups of computer system (12, 14), com
 - means (26) for extracting a reference characteristic value (H1) from a copy of electronic data (B2(T)) attached with a reference characteristic extraction reference characteristic value
- 2 value (H1) obtained from original electronic data (A1),

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- lating means (26) for calculating a comparison subject characteristic value (H2,H3) from the comparison subject characteristic value calcucopied electronic data (B2) and/or electronic data (A2) recopied from the original electronic data (A1); and
- 8 ĸ, determining means (26) for determining authenticity of the copied electronic data (B2) and/ or the recopied electronic data (A2) by comparing the reference characteristic value (H1) and the comparison subject characteristic value (H2,H3)
- 39 8 longing to the managing computer system (12), wherein the source of the copied electronic data (82) and/or the recopied electronic data (A2) is The electronic data management system of claim 1, the computer systems being classified into a management computer system (12) provided with (26), the comparison subject characteristic value calculating means (26), and the determining means the reference characteristic value extraction means (26), and a managed computer system (14) not bemanaged by the management computer system
- â teristic value (H1) calculated based on the original electronic data (A1) to the original electronic data The electronic data management system of claim 2, the computer management system (12) being provided with reference characteristic value attaching means (22) for attaching the reference charac-
- 20 8 of claims 1 to 3 wherein each item of electronic data (A1, A2, B2) is electronic drawing data, and each characteristic value (H1, H2, H3) is a hash value calculated based on graphic information included in The electronic data management system of any one each item of electronic drawing data (A1,A2,B2).
 - The electronic data management system of claim 2 or 3, the computer system (12) on customer side being provided with determination means (26) for ĸ.

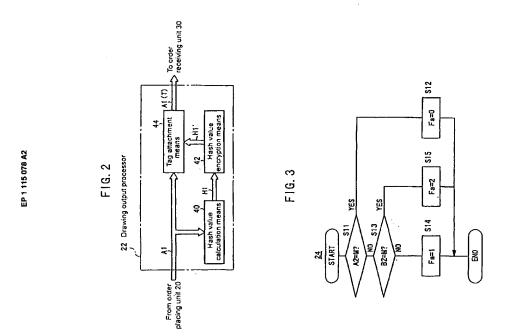
electronic drawing data (A2, B2) coincide by com-paring the electronic drawing data taken as the cop-ied electronic data (A2) sourced from the computer system (12) on customer side, and/or the electronic drawing data taken as the copied electronic data the computer system on the customer side for placing orders for manufacture of the product (M) based (14) is the computer system on manufacturer side for manufacturing the product (M) ordered by the computer system (12) on the customer side and for delivering the product (M). determining whether or not the product (M) and the (B2) sourced from the computer system (14) on manufacturer side with the product (M) delivered by the computer system (14) on manufacturer side, wherein the management computer system (12) is tronic data (A1) and the managed computer system on the electronic drawing data as the original elec-

of claims 1 to 5, wherein the reference characteristic value (H1) is encrypted and embedded in the electronic data (A1(T1), B2(T2)). The electronic data management system of any one

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- of claims 1 to 6, wherein the reference characteristic value (H1) is embedded in the electronic data (A1 (T1), B2(T2)) utilizing electronic water-mark tech-The electronic data management system of any one ۲.
- (A1) in advance and outputting the original electronic drawing data (A1(T1)) affixed with the reference tronic drawing data (B2) and/or the recopied electronic drawing data (A2) have/has been altered by An electronic data management method for storing drawing data of a product (M) to be ordered from a manufacturer, comprising the steps of: calculating information of the original electronic drawing data characteristic value (H1) to the manufacturer; and original electronic drawing data (A1) and outputting the original electronic drawing data (A1) as the a reference characteristic value (H1) from graphic determining whether or not either of the copied eleccomparing the reference characteristic value (H1) with the comparison object original value (H2). æ

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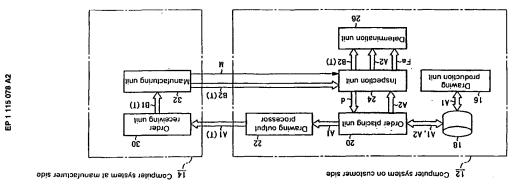
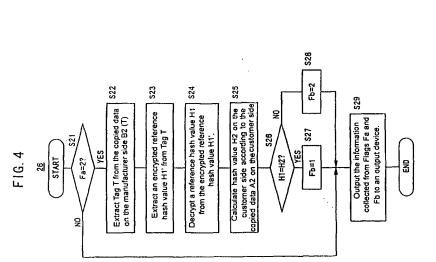


FIG. 1 10 Electronic data management system



Extract Tag T from the copied data on manufacturer side B2 (T).

Extract an encrypted reference hash value H1' from the encrypted reference hash value H1.

Calculate hash value H3 on the manufacturer side according to the manufacturer side according to the manufacturer side according to the Fig. 4 \$25

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